DOCUMENT RESUME

ED 415 933 JC 980 095

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TITLE	Multimedia, It's Soup!
INSTITUTION	Fresno City Coll., CA.
PUB DATE	1996-04-00
NOTE	11p.; Paper contributed to the Teaching in the Community College Online Conference, "Innovative Instructional Practices" (1st, Kapiolani Community College, April 2-4, 1996).
AVAILABLE FROM	http://leahi.kac.hawaii.edu/org/tcc conf96
PUB TYPE	Reports - Descriptive (141) -- Speeches/Meeting Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	Classroom Environment; Community Colleges; Computer Assisted Instruction; Computer Literacy; Computer Uses in Education; *Curriculum Development; Educational Change; *Educational Technology; *Multimedia Instruction; Multimedia Materials; Technological Literacy; Technology Education; Two Year College Students; Two Year Colleges
IDENTIFIERS	*Fresno City College CA; Secretarys Comm on Achieving Necessary Skills

ABSTRACT

In 1996, Fresno City College (California) introduced a multimedia presentations class to increase learning efficiency and teach students the skills they need to compete in a technologically advancing society. The course, entitled "Classroom of the Future," was presented to the Dean of Instruction for approval in 1993. Funding was generated from various programs and grants, and the curriculum was developed in adherence to the Secretary's Commission on Achieving Necessary Skills (SCANS) guidelines. The class required students to complete assigned tasks, work together in teams, acquire and evaluate data, and understand and actively participate in the computer system. At its conclusion, students presented a group multimedia project. An expanded course content involving work groups, multimedia application design, and multimedia tools offered further opportunity for skills development. Feedback indicates that multimedia is a valuable and cost-effective tool for learning, the use of which may inspire a kind of technological reform in education. Document addendums list class hardware and software. (Contains 11 references.) (YKH)

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Multimedia, It's Soup!

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MULTIMEDIA, IT'S SOUP!!

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Many years ago there was a television commercial for a well-known brand of soup. While a woman stirred a pot on the stove and the narrator extolled the virtues of tomato or chicken noddle, a child impatiently asked, "Is it soup yet?" Multimedia training is a little bit like soup. It's been cooking for a long time, and everyone is hungry for a taste."(Digital Multimedia, 1995)

In the Fall 1996 semester Fresno City College is introducing a new class entitled "Multimedia Presentations". This course is being offered in response to surveys from local businesses, our advisory Business and Industry Council and requests from students and faculty. The following paper discusses the background into how this course became a reality, the system requirements (hardware & software) necessary to teach this course, marketing strategies and curriculum development to include alternative teaching methodologies using The Secretary's Commission on Achieving Necessary Skills (SCANS) competencies (U.S. Department of Labor).

WHAT IS MULTIMEDIA?

Once upon a time, the word multimedia was used to mean adding sound to motion pictures. Then as pedagogical research examined how we learn; we realized that individuals learn in different ways and the use of multiple medias began to play an important role in educational theory. Research showed that people learn through different senses. The more senses that are stimulated, the better the chance for later recall. This is sometimes referred to as different learning styles (Anderson & Adams, 1992; Dede, 1987; Erickson, 1994). Multimedia in the larger sense relates to learning techniques that appeal to sight, sound, touch and smell. By appealing to more than one sense, e.g. multisensory learning, we as teachers are apt to help a greater number of students, than say through "one-dimensional" techniques that depend on sight and/or sound.

Prior to the technological revolution, these "media" included such things as films, sound recordings, photograph/view graphs, charts, games, slides, and even *real* objects or manipulatives. These were usually stand-alone methods of instruction that were not integrated into a synchronized delivery system. Today, multimedia is more associated with computer systems. However, it still retains the same basic meaning: providing (through computer systems) multiple methods by which people learn and retain information.

A multimedia computer system incorporates not only text on a screen, but also photo quality images, sound, animation, graphics, video and interactive computer functions with which these elements can be manipulated. According to Hofstetter (1995), there are four components that are essential to be considered multimedia: First, there must be a

computer to coordinate what you see and hear and to interact with. Second, there must be links that connect the information. Third, there must be navigational tools. And, finally, there must be ways for you to gather, process and communicate your own information and ideas. "If one of these components is missing, you do not have multimedia. For example, if you have no computer to provide interactivity, you have mixed media, not multimedia. If there are no navigational tools to let you decide the course of action, you have a movie, not multimedia. If you cannot create and contribute your own ideas, you have a television, not multimedia" (Hofstetter cited in Charp, 1995).

As this concept has received broad acceptance in the educational community we look at multimedia as an ingredient essential to educational reform.

I HAVE A DREAM...

Let me relate a story, which like all good stories has a happy ending. Once upon a time, in April 1993, a student in one of my computer classes asked why our college didn't offer courses in multimedia. I could have offered the traditional platitudes: not enough money to buy the hardware, not enough money to buy the software. Who would teach it? The learning curve would be too steep for me to offer the course by the next semester, besides, it was not my job, didn't have enough time, etc. Instead, I answered, inadequately, "That's a *good* question", and shrugged my shoulders in resignation.

The sincerity in which the question was asked gave me pause, _and_ made me reflect on _what_ exactly *is* my role as a educator. After much contemplation I would have to say I am an "agent for change". Rather than complain about the status quo I look for viable solutions, alternative remedies, and work to get others to "buy into" my vision. I also began to gather research to support my position. The following are some interesting trends:

- Multimedia is fast emerging as a basic skill that will be as important to life in the 21st century as reading is today (Hofstetter, 1995).
- The availability of good multimedia material is creating a new excitement in learning, and because of this, resistance amongst educators has decreased. However, faculty members have insufficient training in graphics, computer programming, animation, etc. and too little time to create meaningful material without adequate training (Charp, 1995).
- The new mantra in corporate America is "do more with less, be more efficient, and work smarter". Because of this, businesses are using their training dollars wisely and are investing in multimedia training.

Let's examine why. According to Hall (1996, p. 42):

> Computer Based Training Reduces Costs. Interactive training has a higher cost of development and a lower cost of delivery than traditional training. However, the training population must be large enough for the savings on delivery to offset the cost of development;

Computer-based Training Requires less Time. The time savings range from 20 to 80 percent, with 40 to 60 percent being the most common. This reduction is usually attributed to a tighter instructional design, the ability to bypass unneeded content and focus on those sections not yet mastered; and finally,

Computer-based Training Results in an Equal or Higher Quality of Learning. A number of studies in settings that include business and industry, the military, higher education and elementary schools have found favorable benefits from computer-assisted training and education.

These facts as well as the surveys from local businesses and our business students definitely supported the *need* for training in multimedia. The next step, how to take this information and develop an implementation plan.

FROM DREAM TO REALITY

Now that the needs assessment had been accomplished, the Information Systems Department met (on several occasions) to establish an action plan. Listed below is a short chronology of events which led to the development of the course "Multimedia Presentations":

DEPARTMENT GOALS and OBJECTIVES

At our college, part of the strategic planning process requires that each department establishes goals it hopes to achieve in the coming year. These goals are initiated by the faculty members within the various departments based upon prior-year goals, new trends in industry and in response to student and business needs. Each department within the division then submits their goals to the Division Dean. It is at this point that it pays to have a department chair who is a good lobbyist negotiating for your piece of the pie. This is also were the dividends are paid to the department who has sufficient research to justify their requests.

The Division Dean then develops the division's goals, prioritizes those requests that require fund expenditures, develops a budget, and presents this information to the Dean of Instruction. This is the crucial and most delicate part of the entire process. If the Division Dean can "sell" the Dean of Instruction on the plan, your project is almost guaranteed approval at the next level. If the Dean of Instruction does not "share your vision", your project is doomed to an early grave. For us, this process began in the Spring of 1993.

MARKETING YOUR PLAN - GETTING THE HARDWARE & SOFTWARE

We entitled our project "Classroom of the Future". The title itself leads you to the following questions: What equipment will the classroom of the future hold? What are the pedagogical implications of using this equipment? What type of skills will students need in the next century? Can we afford to wait until the next century to start providing these skills?

The excitement generated from our initial idea made it easy to sustain support for the necessary equipment that would make this a reality. The initial capital investment into designing a multimedia laboratory is great. We received four multimedia teacher stations Spring 1994. In the Fall 1995 we received an additional thirty-two Pentium computers, approximate cost $50,000; and a upgraded network server, $3,500. A list of the equipment and costs are included in the Addendum entitled Hardware & Software.

Being in the vocational area helped, funding for the hardware was available through the Vocational & Applied Technology Educational Act (VATEA), better known as the Carl Perkins Act. Additionally, grant monies were received through the district's allocation of California lottery funds and from the college's discretionary account in the form of mini-grants which are set aside for instructional improvement. We have also identified future funding sources:

- California: 2001 - a program through the California Community Colleges Foundation whose mission is to develop and build productive partnerships between industry and the California Community Colleges System;
- Grants from the California Community Colleges Chancellor's Office, and
- Grants from the California Department of Education.

It should be noted that VATEA funds are scheduled to expire in 1998, and will be replaced by block grant funding disbursed at the state level.

CURRICULUM DEVELOPMENT - THE LAST HURDLE

In California, Assembly Bill 1725 commonly referred to as the "Shared Governance" bill delineates areas of responsibility for faculty and administration. In the area of curriculum, the development, design, approval and evaluation is the résponsibility of the faculty. Additionally, Title V of the Education Code provides very specific guidelines on what items will be included as part of the curriculum documentation. These include but are not limited to: course title, catalog description, prerequisites, corequisites, advisories, course description, entry level skills, degree applicability, credit/noncredit, expected outcomes/objectives, texts and reading materials, assignments by type, etc.

All of these items will not be covered, however; we will discuss the course content. In this particular course, the content was designed to include the Secretary's Commission on Achieving Necessary Skills (SCANS) competencies. For those not familiar with this report a short overview follows which identifies how the "Multimedia Presentations" course articulates with these guidelines.

Additionally, the cornerstone of this course is cooperative groupwork. Research suggests that well designed group work allows students to learn from each other, stimulates them to carry out higher order thinking, and causes group members to experience authentic intellectual pride of craft when the product is more that what any single member could create (Cohen, 1986; Davis-Gross, 1993; Johnson, Johnson & Stanne, 1985; Slavin,

1990). At the conclusion of the class as part of the assessment on learning the students will present a group multimedia project. These presentations can be initiated by the group or the group may choose to satisfy a special request for a multimedia project from a faculty member.

SCANS - A SHORT OVERVIEW

The SCANS report was based upon 12 months of interviews with business owners, public employers, managers, union officials, assembly line workers, researchers, economists, etc.. The report draws three major conclusions:

- All American high school students must develop a new set of competencies and foundation skills if they are to enjoy a productive, full, and satisfying life.
- The qualities of high performance that today characterize our most competitive companies must become the standard for the vast majority of our companies, large and small, local and global.
- The nation's schools must be transformed into high-performance organizations in their own right.

The following chart comes from the report and provides an excellent overview of the report's recommendations.

5 COMPETENCIES:

Resources - allocating time, money, materials, space, and staff;

Interpersonal Skills - working on teams, teaching others, serving customers, leading, negotiating, and working well with people from culturally diverse backgrounds;

Information - acquiring and evaluating data, organizing and maintaining files, interpreting and communicating, and using computers to process information;

Systems - understanding social, organizational, and technological systems, monitoring and correcting performance, and designing or improving systems;

Technology - selecting equipment and tools, applying technology to specific tasks, and maintaining and troubleshooting technologies.

THREE-PART FOUNDATION:

These competencies are based upon a three-part foundation, that includes:

Basic skills - reads, writes, performs arithmetic and mathematical operations, listens, and speaks.

Thinking skills - thinks creatively, makes decisions, solves problems, visualizes, knows

how to learn and reasons.

Personal Qualities - displays responsibility, self-esteem, sociability, self-management, and integrity and honesty.

SCANS COMPETENCIES IN THE COURSE "MULTIMEDIA PRESENTATIONS":

Students will:

1. Allocate resources(time) to successfully complete assigned tasks.
2. Work in teams to complete tasks, contribute to the class by teaching others and/or preparing instructions for others.
3. Acquire and evaluate data, organize and maintain portfolios, interpret and communicate information to others, use the computer on- and off-line to process information.
4. Understand the operation of an electronic networked system in data retrieval and storage of files.
5. Select equipment and software for multimedia, utilize the tools for specific tasks; and troubleshoot problems and/or conflicts.

If we think of multimedia as being like a recipe, you can have all the right ingredients and know the formula, but that is not enough to guarantee a successful presentation (Jacobsen, 1996). To ensure that students put-it-all-together successfully, the following expanded course content provides an outline for success.

1. Team/Work Groups
    1. Introduce group process skills to students.
    2. Prepare students to work in groups by establishing class norms and performing exercises in cooperation.
    3. Define roles and responsibilities of development team members.
    4. Define the multimedia training/information development process.
2. Multimedia Application Design
    1. Explore the factors that contribute to successful multimedia design.
    2. Students will view examples of working screens, interactive sessions, and captured software sequences to see what design considerations influenced the finished product. Topics include screen design, interactivity, and the use of

hypermedia.

3. Effective Writing & Editing - "You ain't never gonna get nowhere if you don't improve your grammar."

3. Using Multimedia Tools

    1. Equipment
        1. Students will become proficient in the use of different tools in the Windows Operating System
        2. Students will learn how to troubleshoot hardware problems.

    2. Students will compare and contrast different presentation and authoring software(MicroSoft PowerPoint, WordPerfect Presentations, Asymmetric's Toolbook, Micromedia's Director & Authorware).

    3. Students will experiment using different approaches for creating multimedia projects including: scripts, flowcharts, and storyboards.

    4. Capturing Multimedia
        1. Scanned images
        2. Captured Video
        3. Sound Recordings - including "live" and pre-digitized recordings (CD-ROM & Video Laser disc)
        4. VHS tapes

    5. Design and Development
        1. Write and design a multimedia presentation
        2. Present a multimedia presentation
        3. Documentation/Maintenance plans of multimedia projects

SUMMARY

All too often educators define the computer as a page-turner and multimedia as entertainment. That is an outdated notion. Students need to experience as many aspects and capabilities of technology as resources will allow. Even a cursory look around at the workplace reveals that the world of work had undergone a profound and significant shift in recent years.

To realize true educational reform we must become change agents at our institutions. The first step is perform a needs assessment and based upon the results develop an action plan and establish short term goals (0-3 years). Elicit the support of fellow faculty members and administrators. Second, market your project, identify potential funding sources to include strategic partnerships with business, local and federal grant opportunities. Identify instructors and seek self-improvement courses and training in areas of targeted weaknesses. And finally, implement your plan, acquire curriculum approval and market the course to faculty, students and businesses.

Multimedia technology, as much as reading and writing, should be a tool for learning, across curricula boundaries and with vision and tenacity educational reform *is* possible.

ADDENDUMS

HARDWARE & SOFTWARE

1	LCD Data/Video Projector (Recommend 470 Lumens gun projector which allows you to leave on lights & maintain clarity)	6,500
1	LCVD video disk player, with cables	875
1	Network Server Pentium 133Mhz 16Mb RAM, 2Gb SCSI-2 Hard disk Quad-Speed CD-ROM	3,360
32	Pentium 75Mhz, 8Mb RAM, 540Mb hard disk (1,478 X 32)	47,396
	Software:	4,000
	(Note: MS PowerPoint, WordPerfect Presentations previously purchased)	

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